Comparison of source apportionment approaches and analysis of non-linearity in a real case model application

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Supplementary Material
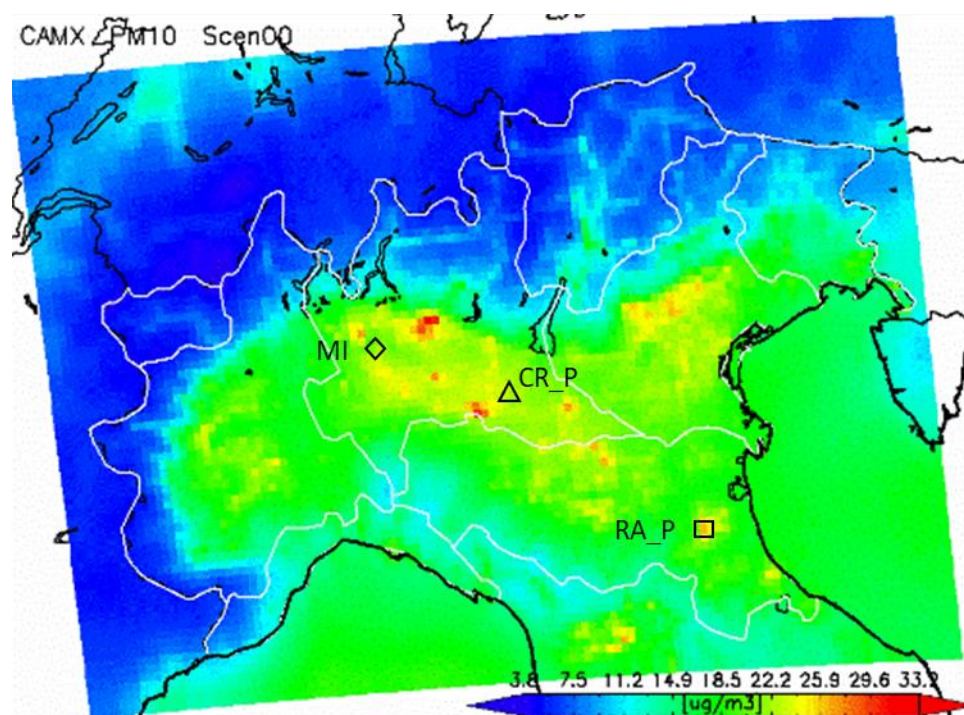
Figure S1. **PM$_{10}$ yearly mean concentrations for 2010 obtained with CAMx. The empty markers indicate the sites for which a detailed analysis of interaction terms and gas ratio was carried out.**
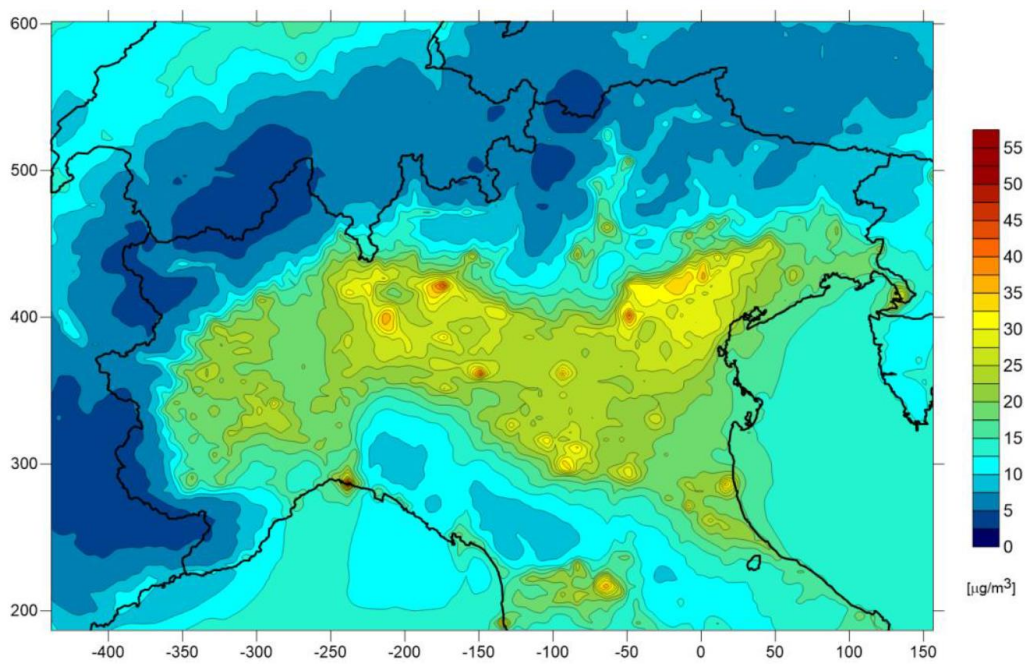
Figure S2. **PM$_{10}$ yearly mean concentrations for 2010 obtained with FARM**
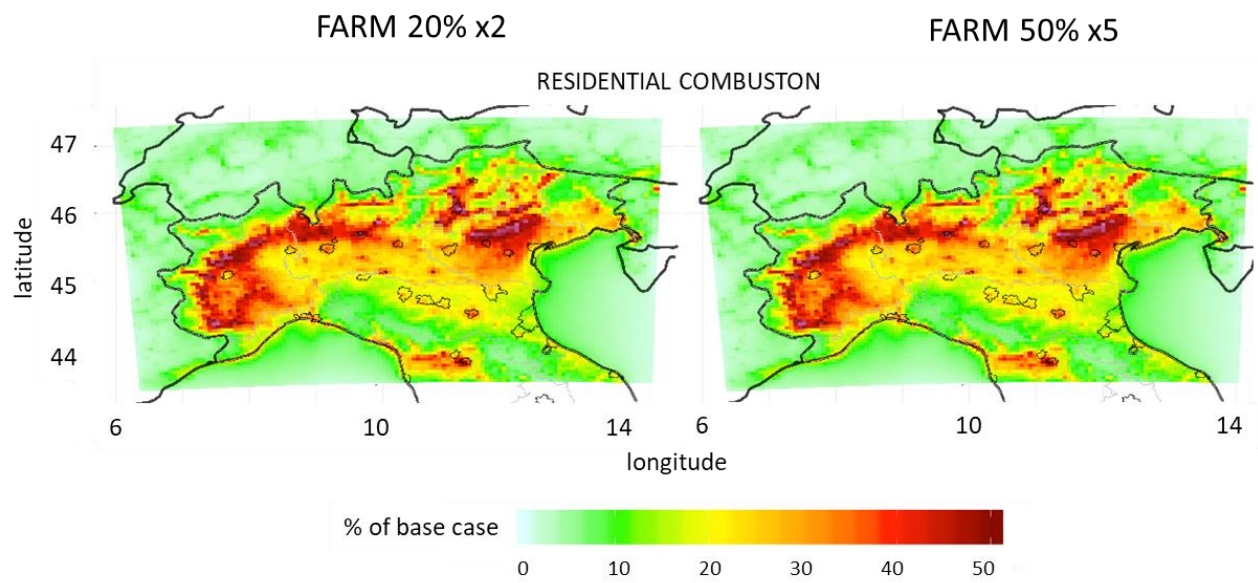
Figure S3. **Annual average impacts of RES expressed as proportion of the base case for 20% and 50% ERLs.**
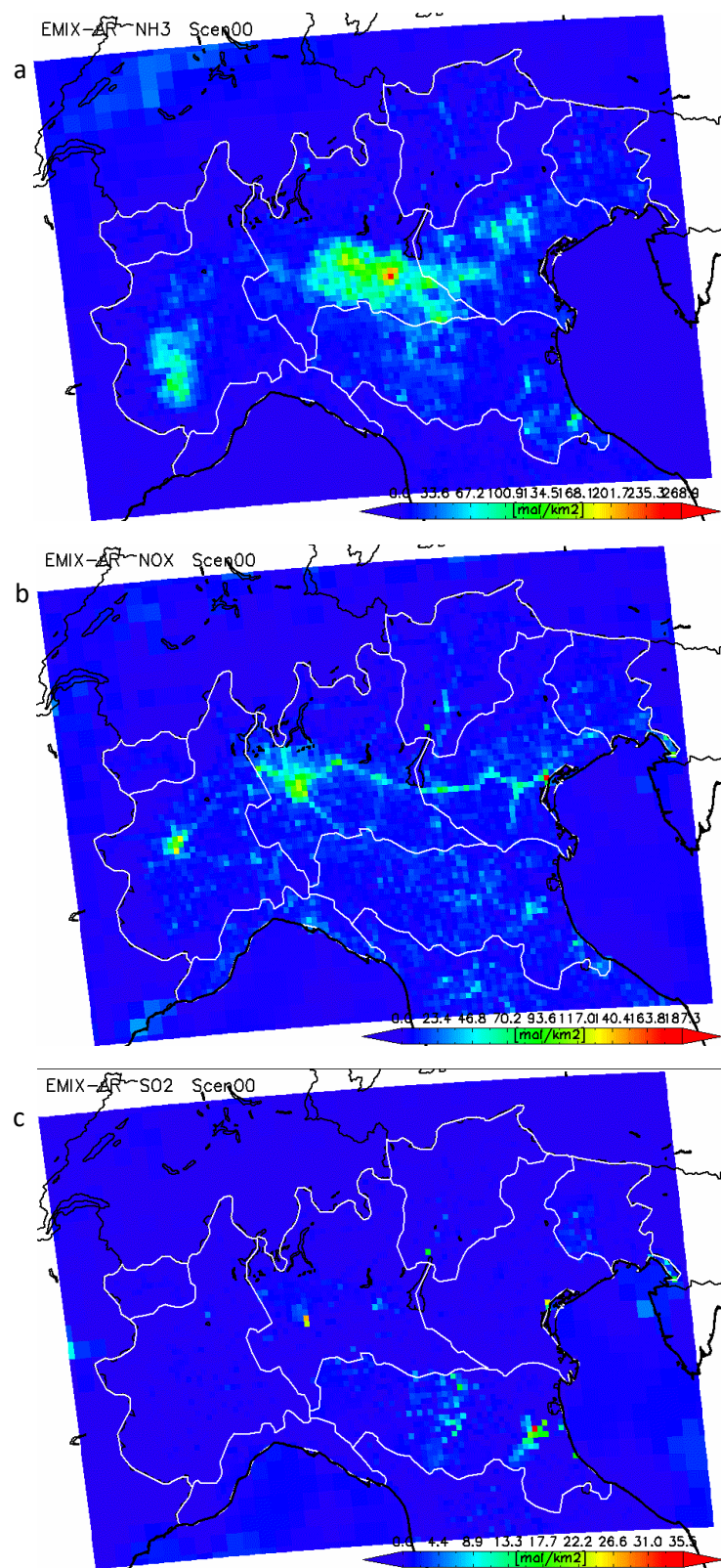
Figure S4. **Emissions of NH₃ (a), NOₓ (b) and SO₂ (c) in the studied domain in 2010.**
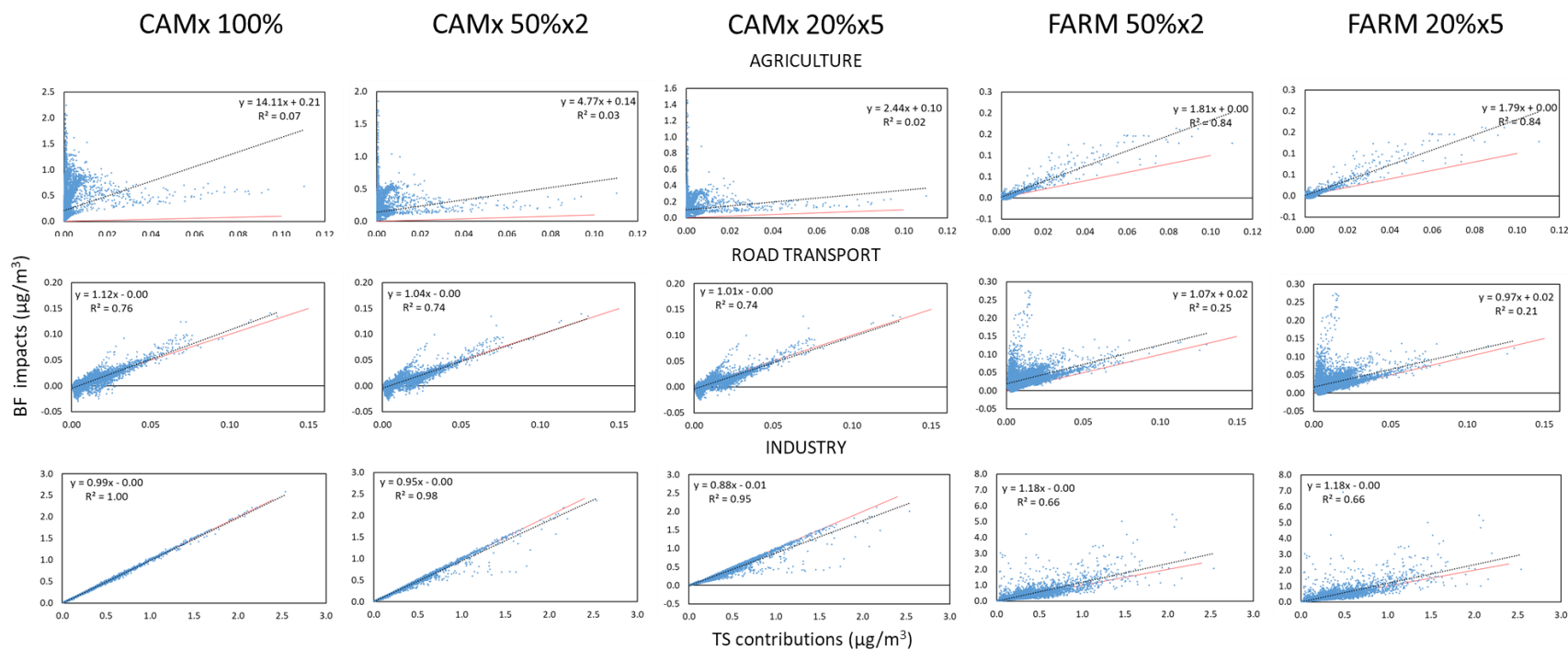
Figure S5. **Scatter plots of the BF impacts (CAMx and FARM) on particulate sulfate versus the TS contributions (PSAT) for 20%, 50% and 100% ERLs. Agriculture (AGR), industry (IND) and traffic (TRA).**
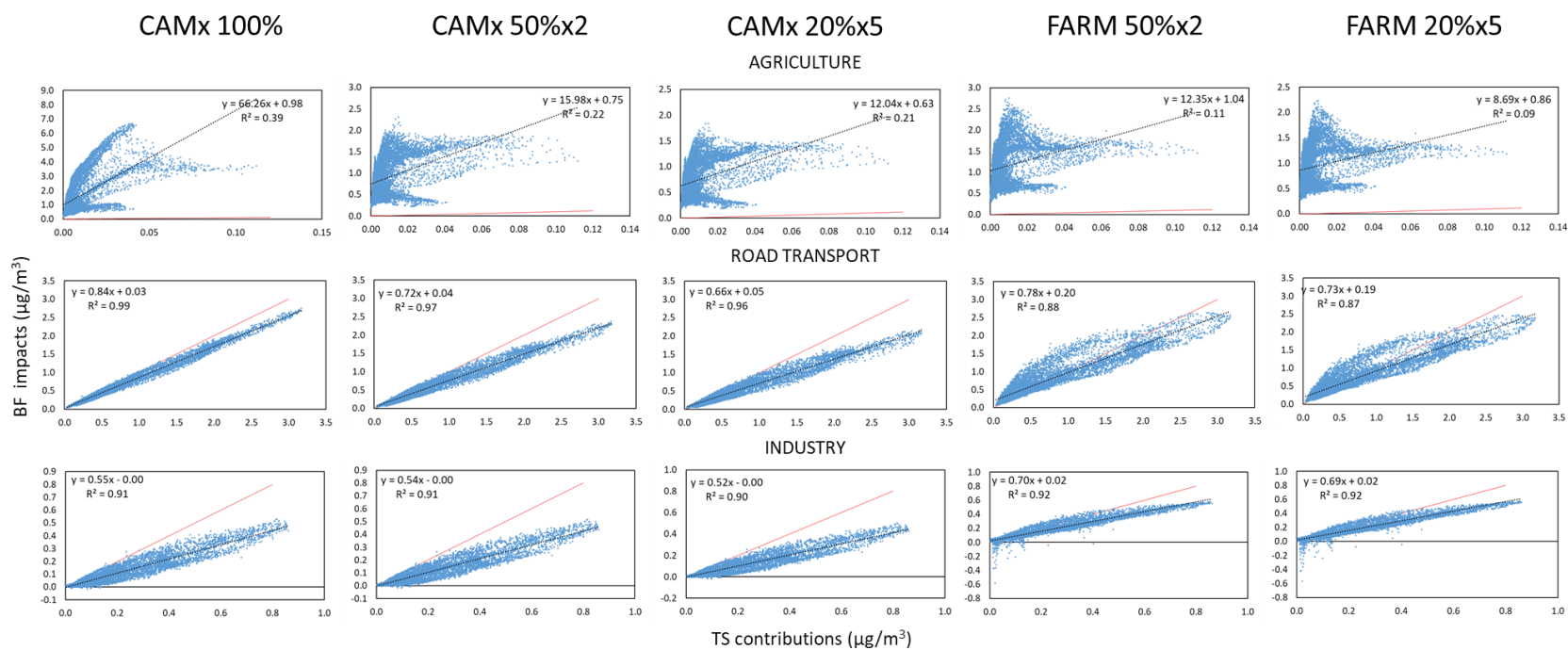
Figure S6. **Scatter plots of the BF impacts (CAMx and FARM) on particulate nitrate versus the TS contributions (PSAT) for 20%, 50% and 100% ERLs. Agriculture (AGR), industry (IND) and traffic (TRA).**
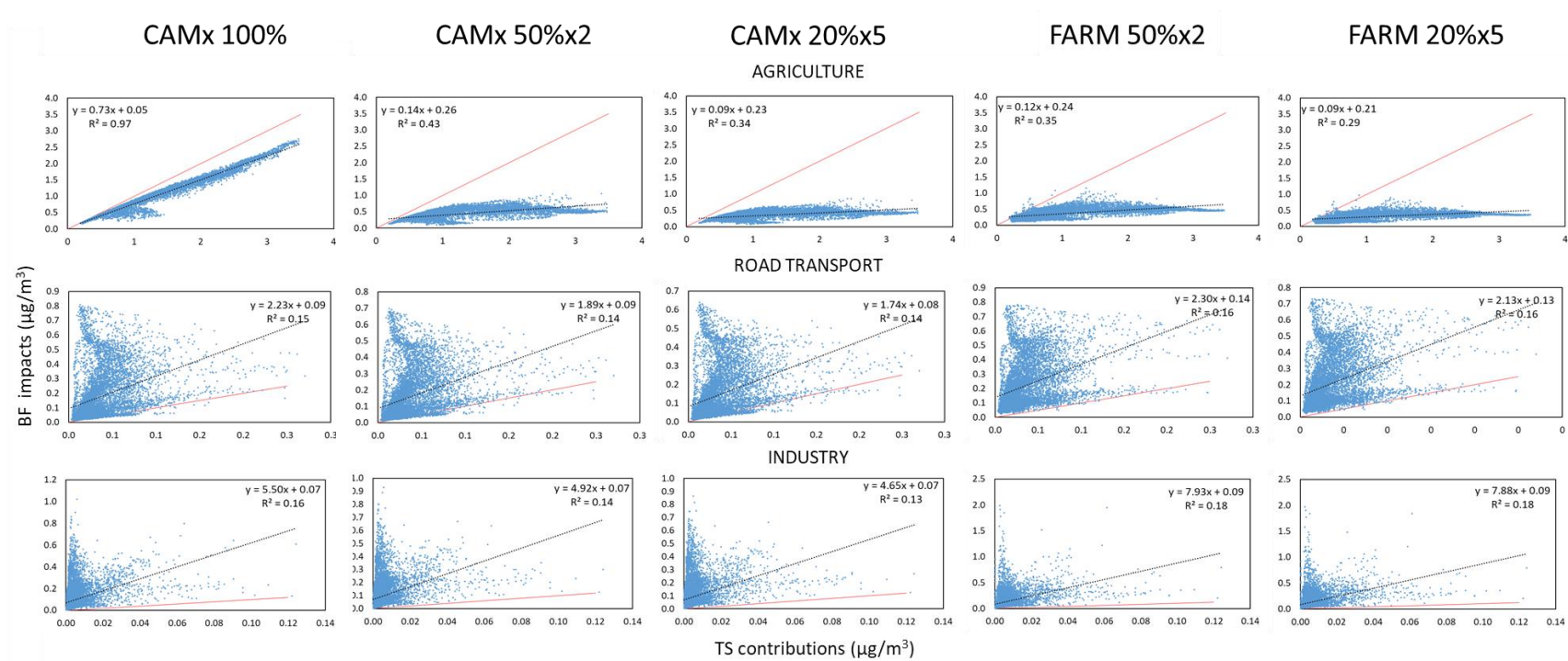
Figure S7. **Scatter plots of the BF impacts (CAMx and FARM) on particulate ammonium versus the TS contributions (PSAT) for 20%, 50% and 100% ERLs. Agriculture (AGR), industry (IND) and traffic (TRA).**
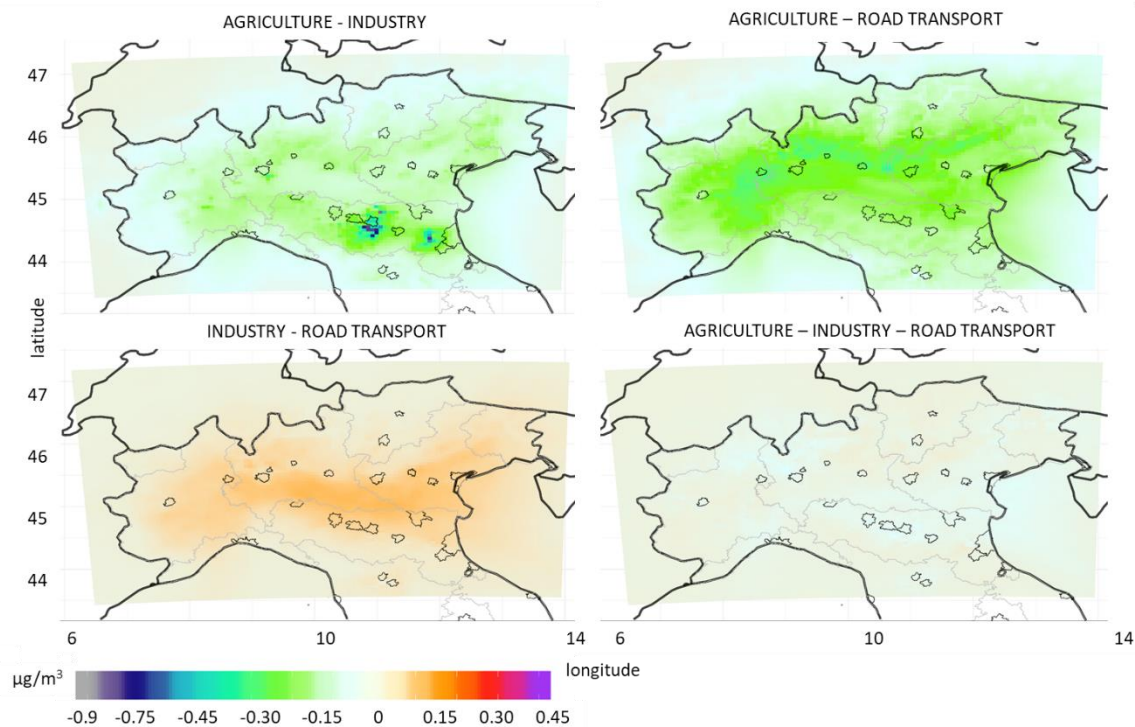
Figure S8 **Map of the binary and ternary interaction terms of the PM$_{10}$ factor decomposition for AGR, IND and TRA in the CAMx 50% scenarios.**
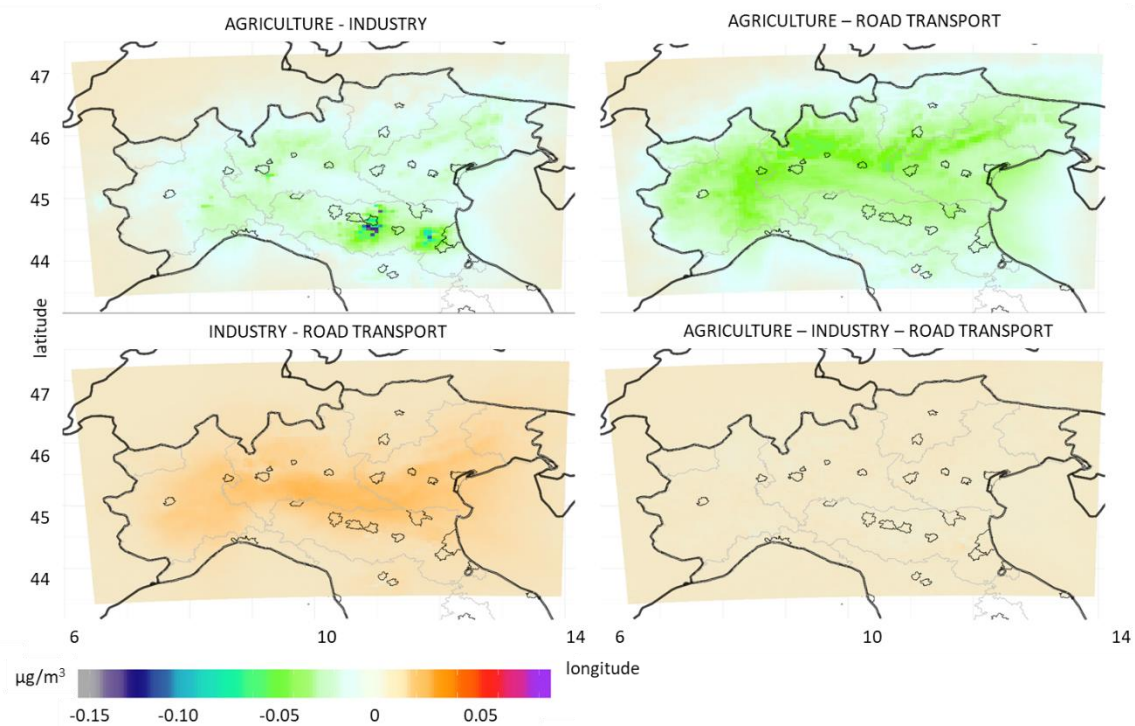
Figure S9 **Map of the binary and ternary interaction terms of the PM$_{10}$ factor decomposition for AGR, IND and TRA in the CAMx 20% scenarios.**
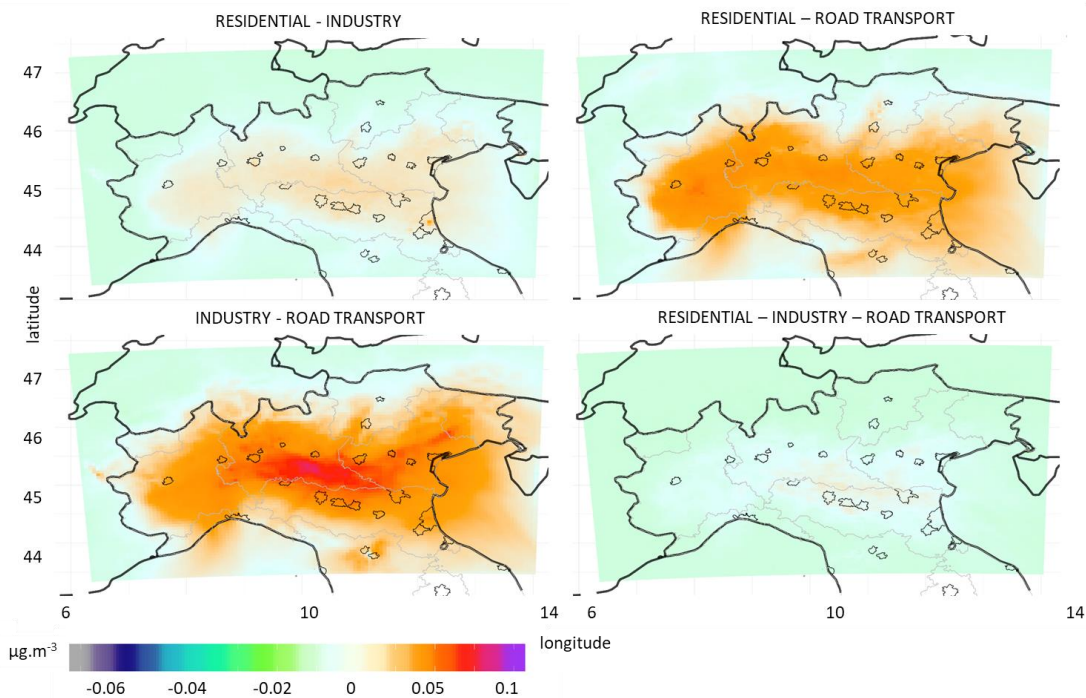
Figure S10 **Map of the binary and ternary interaction terms of the PM$_{10}$ factor decomposition for RES, IND and TRA in the FARM 50% scenarios.**
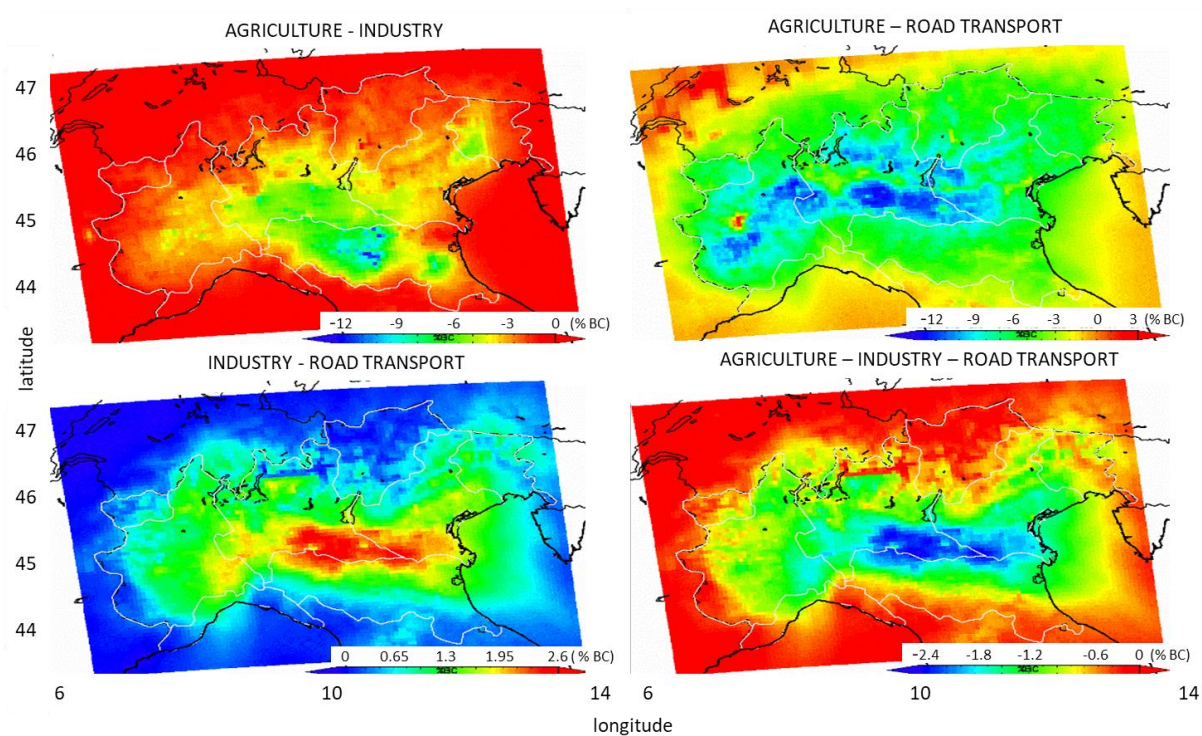
Figure S11 **Map of the binary and ternary interaction terms of the PM$_{10}$ factor decomposition for AGR, IND and TRA in the CAMx 100% scenarios expressed as percentage of the base case.**
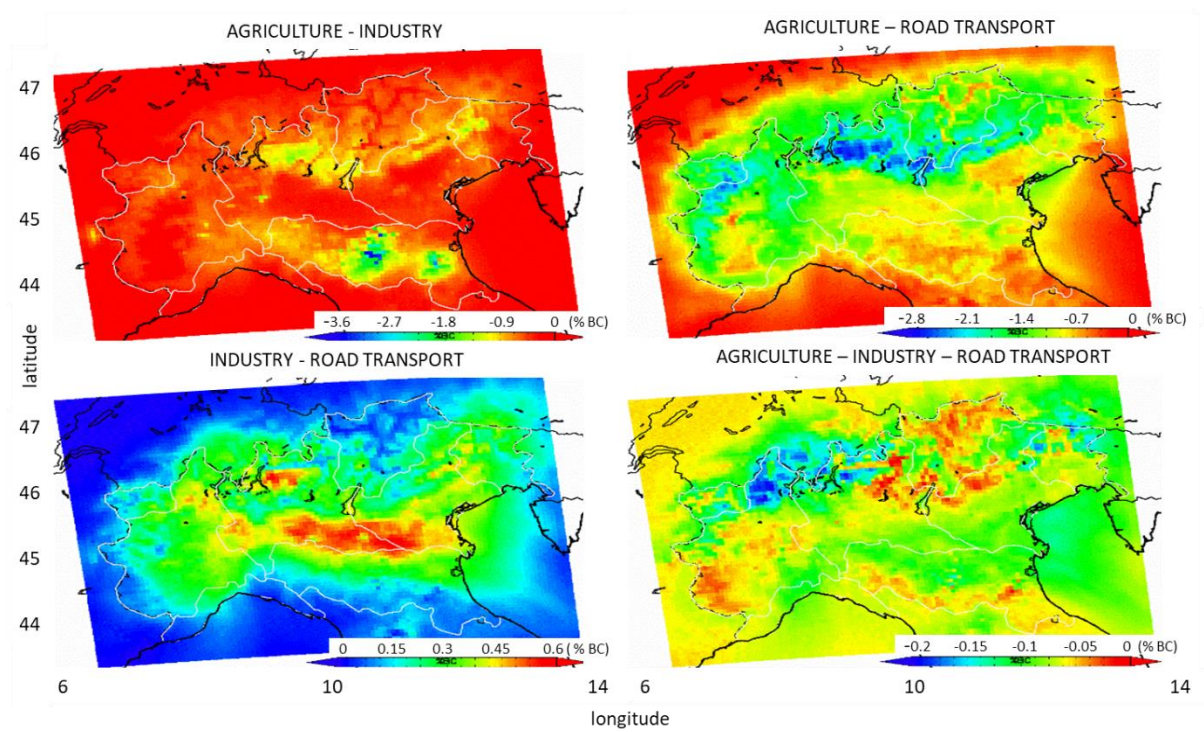
Figure S12 **Map of the binary and ternary interaction terms of the PM$_{10}$ factor decomposition for AGR, IND and TRA in the CAMx 50% scenarios expressed as percentage of the base case.**